

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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In re Patent Application of:  
Michael Masterov et al.

Application No.: 10/815,157

Confirmation No.: 8197

Filed: March 31, 2004

Art Unit: 3694

For: METHOD AND APPARATUS FOR  
DETECTING HIGH-ENERGY RADIATION  
USING A PULSE MODE ION CHAMBER

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Examiner: D. L. Greene

MS: Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**REPLY BRIEF UNDER 37 C.F.R. § 41.41**

In response to the Examiner's answer dated April 14, 2009, to the Amended Appeal Brief filed December 31, 2008, Appellant submits the following.

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**I. Status of Claims**

U.S. Application Serial No. 10/815,157 (“the ‘157 Application”) was filed on March 31, 2004. As filed, the ‘157 Application included claims 1-12. In a response to a Restriction Requirement filed March 13, 2006, Group I, claims 1-9, was elected with traverse and new claim 13 was added. Subsequently, in a response to an Office Action filed September 1, 2006, claim 3 was canceled, claims 1, 2, and 4-9 were amended, and claims 10-13 were withdrawn. In a response to a final Office Action filed June 20, 2007, claims 1, 5, and 9, were amended. Further, in a response to an Office Action filed January 2, 2008, claim 1 was amended.

Accordingly, claims 1-2 and 4-9 are currently pending in the ‘157 Application. Claim 1 is independent. The remaining claims depend, either directly or indirectly, from claim 1.

A request for Pre-Appeal review was filed on July 15, 2008, and a Notice of Panel Decision from Pre-Appeal Brief Review was mailed on September 2, 2008.

As such, all claims 1-2 and 4-9 stand finally rejected under 35 U.S.C. §103(a) as obvious over the cited references. Appellant therefore respectfully appeals the final rejection of claims 1-2 and 4-9, asserting they are not rendered obvious by the proposed combination of references.

**II. Grounds of Rejection to be Reviewed on Appeal**

The present Appeal addresses the following grounds of rejection:

- Whether claims 1, 2, and 4-9 are unpatentable under 35 U.S.C. §103(a) over U.S. Patent No. 3,873,840 (hereinafter “Ellis”) in view of U.S. Patent No. 4,763,343 (hereinafter “Yanaki”) or U.S. Patent No. 5,327,029 (hereinafter “Ericson”).
- Whether claims 1, 2, and 4-9 are unpatentable under 35 U.S.C. §103(a) over Ellis in view of either Yanaki or Ericson and further in view of any of U.S. Patent No. 3,045,123 (“Frommer”), an article, “The Photo Electric Effect Experiment 2-8” (“Experiment 2-8”), or U.S. Patent No. 5,905,262 (“Spanswick”).

- Whether claims 5 and 9 are unpatentable under 35 U.S.C. §103(a) over Ellis in view of either Yanaki or Ericson and further in view of U.S. Patent No. 6,889,152 (“More”).
- Whether claims 5 and 9 are unpatentable under 35 U.S.C. §103(a) over Ellis in view of either Yanaki or Ericson in view of any of Frommer, Experiment 2-8, or Spanswick and further in view of More.

### III. Response to Examiner’s Arguments

Appellant submits the following remarks in response to the Examiner’s Answer.

#### A. Claims 1-2 and 4-9 are patentable over Ellis, Yanaki, and Ericson

1. **Measuring a leakage current signal after the voltage pulse has been turned off, after ion transport has stopped, and after measuring the ion current signal is not shown or suggested.**

In the Examiner’s Answer, the Examiner asserts that Ellis *inherently* measures and removes the leakage current because Ellis subtracts the gamma signal from the neuron signal. Then, the Examiner asserts that because both signals contain a leakage current, Ellis inherently subtracts the leakage current. *See* Examiner’s Answer, at page 4. The Examiner further asserts that “[s]ubtraction of the gamma signal inherently includes the leakage current, because the leakage current was measured along with the gamma signal.” *See* Examiner’s Answer, at page 10. Appellant respectfully disagrees.

MPEP makes it clear that, “[t]he fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. . . . In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art” (*see* MPEP

§ 2112.) Appellant respectfully asserts that measuring a leakage current does not necessarily flows from the subtracting the gamma signal from the neuron signal as taught by Ellis.

In fact, Ellis teaches *subtracting* a gamma signal, not *measuring* a leakage signal. Specifically, Ellis teaches subtracting a gamma signal from a signal including the gamma signal and a neutron signal. *See* Ellis, Abstract, column 5, lines 6-9 and 17-21. Here, it is clear to a skilled artisan that *by using a filter, a particular signal can be subtracted or removed without measuring the signal*. Therefore, mere subtracting a gamma signal as taught by Ellis does not *necessarily* lead to *measuring* a leakage current.

Accordingly, the Examiner has failed to establish that Ellis shows or suggests, *either explicitly or inherently*, at least “*measuring a leakage current signal* after the voltage pulse has been turned off, after ion transport has stopped, and after measuring the ion current signal,” as required by independent claim 1.

**2. Yanaki fails to supply that which Ellis lacks and expressly teaches away from the claimed invention.**

In response to the Appellant’s arguments, the Examiner asserts that because Yanaki clearly teaches removing leakage current with no ionization relying upon column 13, lines 60-64 of Yanaki, Yanaki teaches “*measuring a leakage current signal* after the voltage pulse has been turned off, after ion transport has stopped, and after measuring the ion current signal,” as required by independent claim 1. *See* Examiner’s Answer, at page 4. Appellant respectfully disagrees.

In fact, column 13, lines 60-64 of Yanaki, clearly teaches a *filter for removing* a noise or current leaked from a sensor. As explained above, it is clear to a skilled artisan that a filter simply subtracts or removes a signal *without measuring the signal*. Accordingly, Yanaki

expressly *teaches away* from the claimed invention because Yanaki clearly teaches *a filter for removing a signal*.

Because a reference that teaches away is a *significant factor* in determining obviousness, the nature of that teaching is highly relevant and must be considered. *See In re Gurley*, 31 U.S.P.Q.2d 1130 (Fed. Cir. 1994). Thus, Appellant respectfully asserts that the Examiner's analysis gives no weight to the teachings in the applied reference which contradict the Examiner's position.

**3. Ericson fails to supply that which Ellis and Yanaki lack.**

Ericson fails to supply that which Ellis and Yanaki lack. In fact, Ericson merely teaches that a leakage current may be included in an input signal, and, thus, the input devices are carefully selected. *See Ericson*, column 5, lines 49-53. Then, Ericson teaches that a capacitor is used to minimize a leakage current to the input node. *See Ericson*, column 6, lines 25-26. Thus, it is clear to a skilled artisan that Ericson is completely silent with respect to *measuring* a leakage current at a particular timing as claimed.

Further, even assuming *arguendo* that a skilled artisan would have known that leakage current would have to be removed at some point from the teachings of Ericson at column 5, lines 48-50, as alleged by the Examiner, Appellant respectfully asserts that Ericson does not teach *measuring* a leakage current signal. As explained above, Ericson teaches that a *capacitor* is used to minimize a leakage current to the input node. It is clear to a skilled artisan minimizing a particular signal by a capacitor does not require measuring the particular signal. Therefore, Ericson necessarily cannot show or suggest at least *measuring* a leakage current signal.

In view of above, Ellis, Yanaki, and Ericson, whether considered separately or in combination, fail to show or suggest at least “*measuring a leakage current signal* after the voltage pulse has been turned off, after ion transport has stopped, and after measuring the ion

current signal,” as required by independent claim 1. Further, Yanaki expressly *teaches away* from the claimed invention. Thus, independent claim 1 is patentable over Ellis, Yanaki, and Ericson. Dependent claims are allowable for at least same reasons. Accordingly, withdrawal of the rejection is respectfully requested.

**B. Claims 1-2 and 4-9 are patentable over Ellis, Yanaki, Ericson, Frommer, Experiment 2-8, and Spanswick**

**1. Ellis, Yanaki, and Ericson fail to show or suggest the invention recited in independent claim 1.**

As discussed above, Ellis, Yanaki, and Ericson fail to show or suggest the invention recited in independent claim 1.

**2. Zeroing out a detector cannot be equated with the invention recited in independent claim 1.**

Appellant respectfully asserts that the procedure of zeroing out allegedly taught by Frommer, Experiment 2-8, and Spanswick necessarily cannot show or suggest at least the specific order of the steps, (a) measuring an ion current signal induced by the voltage pulse, then, (b) measuring a leakage current signal after the voltage pulse has been turned off and after ion transport has stopped, and, then, (c) determining magnitude of the high-energy radiation flux based on the ion current signal and the leakage current signal, as required by independent claim 1.

The Examiner acknowledges that one skilled in the art would readily recognize that the procedure of zeroing out is conducted as follows: (i) a detector may be affected by a leakage current signal before applying a voltage to a circuit to be measured, then, (ii) the position of zero showed by the detector is adjusted, and, then, (iii) an ion current signal of the circuit is measured by the detector. After that, the Examiner alleges that when the user measures the output of a

second detector or measures the output from the same detector at a second time, the magnitude of the high energy flux is dependent on the ion current signal and the leakage current signal. Then, the Examiner alleges that the magnitude of the measured phenomenon is based upon the phenomenon itself, not based upon the leakage, *See Examiner's Answer*, at page 14.

Appellant respectfully asserts that the first Examiner's statement is inconsistent with the second Examiner's statement. It would be clear to a skilled artisan that if the magnitude of the high energy flux is dependent on *both the ion current signal and the leakage current signal*, the magnitude of the measured phenomenon is also based upon *both the ion current signal and the leakage current signal*, and, thus, the magnitude of the measured phenomenon cannot be based solely on the phenomenon. Accordingly, the procedure of zeroing out cannot be equated to the specific steps, (a) measuring an ion current signal induced by the voltage pulse, then, (b) measuring a leakage current signal after the voltage pulse has been turned off and after ion transport has stopped, and, then, (c) determining magnitude of the high-energy radiation flux based on the ion current signal and the leakage current signal, as required by independent claim 1.

The Examiner further alleges that the procedure of zeroing out shows or suggests the claimed invention because the steps recited in independent claim can be construed in the different order from the order recited in the claim. *See Examiner's Answer*, at page 16. Appellant respectfully asserts that one of the ordinary skill in the art would not *reasonably* interpret independent claim 1 as proposed by the Examiner.

Instead, a skilled artisan would recognize that independent claim 1 requires the steps in the recited order. In fact, independent claim 1 explicitly recites (i) applying *a voltage pulse* for a predetermined time between electrodes in an ion chamber, wherein the ion chamber is filled with a gas capable of forming charged ions by high-energy radiation, (ii) measuring an ion current



signal related to ion currents induced by *the voltage pulse while the voltage pulse is being applied to the electrodes*, (iii) measuring a leakage current signal *after the voltage pulse has been turned off*, after ion transport has stopped, and *after measuring the ion current signal*, (iv) determining a magnitude of the high-energy radiation flux dependent on the ion current signal and the leakage current signal *after measuring the leakage current signal*, and (v) outputting the result of the magnitude of the high-energy radiation flux.

Especially, the step (i) explicitly recites “*applying a voltage pulse*,” and the step (iii) explicitly recites “*after the voltage pulse has been turned off*.” Further, the specification describes, for example, an ion transport voltage is turned on in step 52, *then*, an ion current is measured in step 53, and, *then*, a leakage current is measured in step 55. *See, e.g.*, Publication of the Specification, paragraphs [0031] – [0035] and [0053] and Figures 4 and 5.

Therefore, in order for a skilled artisan to construe that independent claim 1 requires the step (iii), and, then, the step (i), as proposed by the Examiner, the skilled artisan would have to completely ignore express limitations of “*applying a voltage pulse*” and “*after the voltage pulse has been turned off*,” as required by independent claim 1 and would be construing independent claim 1 directly in contrast to the context of the specification.

Consequently, the Examiner’s proposed interpretation of claim 1 is clearly not *reasonable*. Indeed, MPEP requires that the Examiner must give the claims of the present application their broadest *reasonable* interpretation *in light of the specification*. *See* MPEP § 2111.01.

The Examiner further alleges that “there is no novelty in subtracting the leakage current from a measurement AFTER the measurement instead of BEFORE the measurement because it is old and well known that the leakage current must be accounted for and subtracted from the

readings of the detector to ensure that it is giving an accurate reading.” *See* Examiner’s Answer, at page 16. Appellant respectfully disagree.

As discussed above, the procedure of zeroing out the detector fails to show or suggest at least the specific order of the claimed steps. Further, a skilled artisan would readily recognize that the intended purpose of the zeroing out the detector is adjusting the position of zero, and, thus, *the value indicated by the detector before zeroing out the detector is not held in the detector*. In other words, in the procedure of the zeroing out, the effect of the leakage current signal, if anything, is *removed* when zeroing out the detector. Therefore, the Examiner merely makes the broad statement of obviousness and has not cited, nor provided, any reference to show that the specific order of the claimed steps is capable of instant and unquestionable demonstration as being “well-known”, as required by MPEP § 2144.03. Moreover, it is well settled that “when the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such teaching or suggestion appears in the reference. *See In re Rijckaert*, 28 USPQ 2d 1955, 1957 (Fed. Cir. 1993).

Accordingly, the Examiner fails to establish that Ellis, Yanaki, Ericson, Frommer, Experiment 2-8, and Spanswick, whether considered separately or in combination, shows or suggests at least the *specific order* of the steps, (a) measuring an ion current signal induced by the voltage pulse, then, (b) measuring a leakage current signal after the voltage pulse has been turned off and after ion transport has stopped, and, then, (c) determining magnitude of the high-energy radiation flux based on the ion current signal and the leakage current signal, as required by independent claim 1.

### **3. The Examiner uses the present application as a guide.**

Appellant respectfully submits that the Examiner, using the present application as a guide, has selected isolated features of the various relied-upon references to arrive at the

limitations of the claimed invention. Use of the present application as a “road map” for selecting and combining prior art disclosures is wholly improper. See *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138 (Fed. Cir. 1985) (stating that “[t]he invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time”); *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992) (stating that “it is impermissible to use the claimed invention as an instruction manual or ‘template’ to piece together the teachings of the prior art so that the claimed invention is rendered obvious . . . This court has previously stated that ‘one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.’”); *In re Wesslau*, 353 F.2d 238, 241 (C.C.P.A. 1965) (stating that “it is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art”).

As discussed above, Ellis, Yanaki, and Ericson only teaches removing or subtracting a signal, not *measuring* a leakage signal. Furthermore, the procedure of zeroing out a detector teaches that a detector may be affected by a leakage current *before applying* a voltage to a circuit to be measured, and, then, the position of zero is adjusted by removing the effect of the leakage current from the detector. Thus, all the cited references are completely silent with respect to the *specific order* of the steps, (a) measuring an ion current signal *induced by the voltage pulse*, then, (b) *measuring a leakage current signal* after the voltage pulse has been turned off and after ion transport has stopped, and *after measuring the ion current signal*, and, then, (c) determining magnitude of the high-energy radiation flux based on the ion current signal and the leakage current signal, as required by independent claim 1. Moreover, as discussed above, the Examiner merely makes the broad statement of obviousness and has not cited, nor provided, any reference

to show that the specific order of the claimed steps is capable of instant and unquestionable demonstration as being “well-known”, as required by MPEP § 2144.03.

Accordingly, the Examiner is not only improperly using the present application as a road map to construct the claimed invention from multiple prior art, but also, the Examiner is doing so in direct contrast to the teachings of the cited references. Thus, this rejection is wholly improper.

In view of above, independent claim 1 is patentable over Ellis, Yanaki, Ericson, Frommer, Experiment 2-8, and Spanswick. Dependent claims are allowable for at least same reasons. Accordingly, withdrawal of the rejection is respectfully requested.

**C. Claims 5 and 9 are patentable over Ellis, Yanaki, Ericson, and More**

As discussed above, independent claim 1 is patentable over Ellis, Yanaki, and Ericson. More does not supply what Ellis, Yanaki, and Ericson lack. In fact, as acknowledged by the Examiner, More is directed to temperature measurements, and More merely teaches by applying known inputs to the amplifier, the gain of the amplifier can be ascertained. *See* More, column 1, lines 25-36 and column 67, lines 10-21.

In view of above, independent claim 1 is patentable over Ellis, Yanaki, Ericson, and More. Dependent claims 5 and 9 are allowable at least for the same reasons. Accordingly, reversal of this rejection with respect to claims 5 and 9 is respectfully requested. C

**D. Claims 5 and 9 are patentable over Ellis, Yanaki, Ericson, Frommer,  
Experiment 2-8, Spanswick and More**

As discussed above, independent claim 1 is patentable over Ellis, Yanaki, Ericson, Frommer, Experiment 2-8, and Spanswick. In fact, as acknowledged by the Examiner, More is directed to temperature measurements, and More merely teaches by applying known inputs to

the amplifier, the gain of the amplifier can be ascertained. *See* More, column 1, lines 25-36 and column 67, lines 10-21.

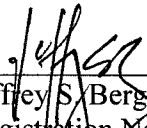
In view of above, independent claim 1 is patentable over Ellis, Yanaki, Ericson, Frommer, Experiment 2-8, Spanswick, and More. Dependent claims 5 and 9 are allowable at least for the same reasons. Accordingly, reversal of this rejection with respect to claims 5 and 9 is respectfully requested.

#### IV. CONCLUSION

In view of the arguments presented in the Amended Appeal Brief dated December 31, 2008, and these supplementary remarks, Appellant respectfully request the Board reverse the Examiner's rejections of claims 1, 2, and 4-9 under 35 U.S.C. § 103(a). Please apply any charges not covered, or any credits, to Deposit Account 50-0591, Reference No. 07754/046001.

Dated: June 3, 2009

Respectfully submitted,

By   
\_\_\_\_\_  
Jeffrey S. Bergman  
Registration No.: 45,925  
OSHA LIANG LLP  
909 Fannin Street, Suite 3500  
Houston, Texas 77010  
(713) 228-8600  
(713) 228-8778 (Fax)  
Attorney for Applicant